

ABSTRACT

1 The present invention provides a method and system for distributed residual tomographic
2 velocity analysis using dense residual depth difference maps. Prestack seismic imaging
3 is performed using an initial velocity field and interpreted horizons. A residual depth
4 difference is estimated referenced to fixed offset and all horizons. Residual depth
5 difference maps are computed for each offset and each horizon. The residual depth
6 difference maps are back projected to determine slowness perturbation. The initial
7 velocity model may be converted to slowness and the estimated slowness is composited
8 therewith to produce a new slowness volume. The new slowness volume is converted to
9 a new velocity volume for performing prestack seismic imaging. This process is repeated
10 until the slowness perturbation is negligible or reaches a predetermined threshold.